

IN THE CLAIMS:

1. (Currently amended) A method for generating views of a heart, said method comprising:

scanning a patient's heart using an imaging scanner to generate a multi-phase axial cardiac dataset;

transferring the multi-phase axial cardiac dataset to a computer;

receiving a selection of a heart phase from a user at the computer, said selection comprising at least one of a systole phase and a diastole phase;

segmenting a left cavity volume image of the heart from the multi-phase axial cardiac dataset;

calculating an axis of inertia of the segmented left cavity volume image;

automatically generating, based on the calculated axis of inertia, at least one of a long axis orientation image and a short axis orientation image of the heart; and

generating an endocardial volume of a left ventricle at an end of the selected phase without further user intervention, wherein the generated volume excludes a plurality of papillary muscles.

2. (Canceled)

3. (Canceled)

4. (Currently amended) A method in accordance with Claim 1 wherein said ~~receiving a multi-phase axial cardiac dataset~~ transferring the multi-phase axial cardiac dataset to a computer comprises receiving, at the computer, a computed tomography (CT) multi-phase axial cardiac dataset.

5. (Currently amended) A method in accordance with Claim 1 wherein said ~~receiving a multi-phase axial cardiac dataset~~ transferring the multi-phase axial cardiac dataset to a computer comprises receiving, at the computer, a positron emission tomography (PET) multi-phase axial cardiac dataset.

6. (Currently amended) A method in accordance with Claim 1 wherein said ~~receiving a multi-phase axial cardiac dataset transferring the multi-phase axial cardiac dataset to a computer~~ comprises receiving, at the computer, a magnetic resonance (MR) multi-phase axial cardiac dataset.

7. (Canceled)

8. (Currently amended) A method in accordance with Claim 1 wherein said generating an endocardial volume of a left ventricle at an end ~~systole of the selected phase~~ without further user intervention comprises generating an endocardial volume of a left ventricle at an end systole phase without user intervention by using at least one of a thresholding tool, a morphological tool, a connectivity tool, an edge detection tool, and a region growing tool.

9. (Original) A method in accordance with Claim 8 wherein said generating an endocardial volume of a left ventricle at an end systole phase without user intervention by using at least one of a thresholding tool, a morphological tool, a connectivity tool, an edge detection tool, and a region growing tool comprises using said tools such that a contour of a slice is not smoothed.

10. (Previously presented) A method in accordance with Claim 8 wherein said generating an endocardial volume of a left ventricle at an end systole phase without user intervention by using at least one of a thresholding tool, a morphological tool, a connectivity tool, an edge detection tool, and a region growing tool comprises:

generating an endocardial volume of a left ventricle at an end systole phase without user intervention by using a thresholding tool, an edge detection tool, and a region growing tool;

using at least one of a thresholding tool, a morphological tool, a connectivity tool, an edge detection tool, and a region growing tool to segment a contrast within the generated endocardial volume of the left ventricle at the end systole phase from myocardium to volume render the contrast contained within the left ventricle at the end systole phase to generate a contrast segmented endocardial volume of the left ventricle at the end systole phase; and

measuring the contrast segmented endocardial volume of the left ventricle at the end systole phase.

11. (Previously presented) A method in accordance with Claim 10 further comprising:

providing the contrast segmented endocardial volume of the left ventricle at the end systole phase to a user for at least one of a verification and an edition of said myocardial contour of the volume prior to said measuring;

receiving at least one of an indication of verification by the user and an edit from the user; and

measuring the contrast segmented endocardial volume of the left ventricle at the end systole phase to calculate at least one of an end diastolic volume, an end systolic volume, an ejection fraction, a stroke volume, and a cardiac output without further user intervention.

12. (Canceled)

13. (Currently amended) A medical imaging apparatus for generating views of a heart along anatomically useful planes, said medical imaging apparatus comprising:

an imaging system comprising:

a detector array;

at least one radiation source;

a computer coupled to said detector array-source; and

a workstation coupled to said computer, said workstation configured to:

receive a multi-phase axial cardiac dataset from said computer;

receive a selection of a heart phase from a user;

segment a left cavity volume image of the heart from said multi-phase axial cardiac dataset;

calculate an axis of inertia of said segmented left cavity volume image; and

automatically generate, based on said calculated axis of inertia, at least one of a long axis orientation image and a short axis orientation image of the heart; and

generate an endocardial volume of a left ventricle at an end of the selected phase without further user intervention, wherein the generated volume excludes a plurality of papillary muscles.

14. (Currently amended) An apparatus in accordance with Claim 13 wherein said imaging system further comprises a Positron Emission Tomography (PET) system and said at least one radiation source comprises an emission radiation source.

15. (Currently amended) An apparatus in accordance with Claim 13 wherein said imaging system further comprises a Computed Tomography (CT) system, said at least one radiation source comprises a transmission radiation source, and said computer is communicatively coupled to said transmission radiation source.

16. (Currently amended) An apparatus in accordance with Claim 13 wherein said workstation is further configured to calculate at least one of an end diastolic volume, an end systolic volume, an ejection fraction, a stroke volume, and a cardiac output using ~~the a~~ a generated endocardial volume of the left ventricle at ~~the an~~ an end systole phase and ~~the a~~ a generated endocardial volume of the left ventricle at ~~the an~~ an end diastole phase.

17. (Currently amended) An apparatus in accordance with Claim ~~13~~ 16 wherein said workstation is further configured to:

provide the generated volumes to a user for at least one of a verification and an edition of a myocardial contour for each of the volumes;

receive at least one of an indication of verification by the user and an edit from the user; and

calculate at least one of an end diastolic volume, an end systolic volume, an ejection fraction, a stroke volume, and a cardiac output using the generated endocardial volume of the left ventricle at the end systole phase and the generated endocardial volume of the left ventricle at the end diastole phase without further user intervention.

18. (Canceled)

19. (Currently amended) A combination comprising:

a computer; and

a computer readable medium encoded with a program executable by the computer for generating views of a heart along anatomically useful planes, said program configured to instruct the computer to:

receive a multi-phase axial cardiac dataset of the heart;

receive a selection of a phase;

segment a left cavity volume image of the heart from said multi-phase axial cardiac dataset;

calculate an axis of inertia of said segmented left cavity volume image;

automatically generate, based on said calculated axis of inertia, at least one of a long axis orientation and a short axis orientation image of the heart;

generate an endocardial volume of a left ventricle at an end systole phase without further input; ~~and~~

generate an endocardial volume of the left ventricle at an end diastole phase without further input;

provide the generated volumes to a user for at least one of a verification and an edition of a myocardial contour for the volumes, wherein the generated volumes exclude a plurality of papillary muscles; and

receive at least one of an indication of verification by the user and an edit from the user.

20. (Canceled)

21. (Currently amended) A method in accordance with Claim 1 further comprising:

providing the generated volume to a user for at least one of a verification and an edition of a myocardial contour for the volume;

receiving at least one of an indication of verification by the user and an edit from the user; and

calculating at least one of an end diastolic volume, an end systolic volume, an ejection fraction, a stroke volume, and a cardiac output using ~~the~~a generated endocardial volume of the left ventricle at ~~the~~an end systole phase and ~~the~~a generated endocardial volume of the left ventricle at ~~the~~an end diastole phase without further user intervention.

22. (Currently amended) A method in accordance with Claim 1 further comprising calculating an end diastolic volume, an end systolic volume, an ejection fraction, a stroke volume, and a cardiac output using ~~the~~a generated endocardial volume of the left ventricle at ~~the~~an end systole phase and ~~the~~a generated endocardial volume of the left ventricle at ~~the~~an end diastole phase without user intervention.

23. (Currently amended) An apparatus in accordance with Claim 13 wherein said workstation is further configured to:

generate ~~an~~the endocardial volume of ~~a~~a ~~the~~the left ventricle at an end systole phase and an end diastole phase without user intervention by using a thresholding tool, an edge detection tool, and a region growing tool;

use at least one of a thresholding tool, a morphological tool, a connectivity tool, an edge detection tool, and a region growing tool to segment a contrast within the generated endocardial volume of the left ventricle at the end systole phase and the end diastole phase from myocardium to volume render the contrast contained within the left ventricle at the end systole phase and the end diastole phase to generate a contrast segmented endocardial volume of the left ventricle at the end systole phase and a contrast segmented endocardial volume of the left ventricle at the end diastole phase; and

measure the contrast segmented endocardial volume of the left ventricle at the end systole phase and the contrast segmented endocardial volume of the left ventricle at the end diastole phase.

24. (Previously presented) A combination in accordance with Claim 19 wherein said program is further configured to instruct the computer to calculate at least one of an end diastolic volume, an end systolic volume, an ejection fraction, a stroke volume, and a cardiac output using the generated endocardial volume of the left ventricle at the end systole phase and the generated endocardial volume of the left ventricle at the end diastole phase.